APFO Ground Control Point Database Status - 2010

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2010 USDA Imagery Planning Meeting

Outline

○ Background

○ Purpose and Use

○ Current Status

○ Future Plans

Background

- Began creating database in 2006
  - Initially used in 2 pilot states
    - Utah in 2006
    - Arizona in 2007
    - Beginning with 2008, all states began transition to absolute accuracy specification
  - Several hundred points with supplemental data stored on local hard drive

Background (cont.)

○ Migration to ORACLE database storage in 2008

- Points and all supplemental data
  - ○ .jpgs, OPUS reports, written descriptions, etc.
- Several fields for each point

Column Name	Data Type	Nullable	Data Default
ABCONTROLPT_ID	NUMBER(6,0)	No	(null)
APFO_ID	VARCHAR2(30 CHAR)	No	(null)
POINT_ID1	VARCHAR2(50 CHAR)	Yes	(null)
POINT_ID2	VARCHAR2(50 CHAR)	Yes	(null)
LAT_DD	NUMBER(19,15)	No	(null)
LON_DD	NUMBER(19,15)	No	(null)
ACCURACY	VARCHAR2(30 CHAR)	No	(null)
FIPS_CODE	VARCHAR2(5 CHAR)	No	(null)
FIPS_STATE	VARCHAR2(2 CHAR)	No	(null)
ABCPT_DESC	VARCHAR2(50 CHAR)	No	(null)
MON_FLAG	VARCHAR2(1 CHAR)	Yes	(null)
PUBLIC_FLAG	VARCHAR2(1 CHAR)	Yes	(null)
COL_DATE	DATE	Yes	(null)
ADD_DATE	DATE	No	(null)
OBS_DATE	DATE	Yes	(null)
UTM_ZONE	VARCHAR2(6 CHAR)	No	(null)
POS_DATUM	VARCHAR2(8 CHAR)	No	(null)
ELEV_DATUM	VARCHAR2(10 CHAR)	Yes	(null)
E_ELEV	NUMBER(11,6)	Yes	(null)
O_ELEV	NUMBER(11,6)	Yes	(null)
AT_YEAR	NUMBER(4,0)	Yes	(null)
LOW_RES	VARCHAR2(30 CHAR)	Yes	(null)
DATA_SRCE	VARCHAR2(50 CHAR)	Yes	(null)
CNTCT_NAME	VARCHAR2(50 CHAR)	Yes	(null)
CNTCT_PHONE	VARCHAR2(30 CHAR)	Yes	(null)
CNTCT_EMAIL	VARCHAR2(50 CHAR)	Yes	(null)

Purpose and Use

○ Primary purpose of the control point database

- A resource to be used as source data in an inspection application such that imagery can be inspected to true ground.

Purpose and Use (cont.)

○ Business Rules for the database

- All states receiving NAIP in 2010 will be inspected using the absolute accuracy specification, provided resources are available.
- Once a state moves to the absolute accuracy specification, it will not revert back to a relative accuracy specification in subsequent years.
- Control point projects will be broken down and managed on a state by state basis, designating a project item area.
- Control will be obtained for use as QA checkpoints, not as Government Furnished Material (GFM).
- The control point database is currently private and will not be released to the public or to vendors without prior approval. Data within the database marked "No" in the "Public" field will not be distributed outside of APFO. Approval authority to distribute this data currently resides with the Geospatial Services Branch Chief.
- Internal/external requests for control point data extracts, including supplemental data for custom analysis will require a written request to GSB – SCSS stating what data is required and the purpose or intended use of the data. GSB – SCSS will determine access, data format and security measures for the requested control point data that is requested.

Purpose and Use (cont.)

○ Roles at APFO
- Geospatial Services Branch
  - ○ Manage all aspects of obtaining control point data
  - ○ Review for usability and format any new or existing control point data prior to the data being loaded into the control point database
  - ○ Load, update, maintain, or obsolete control point data within the database
  - ○ Determine impacts horizontal velocity may have on control points in the database

Purpose and Use (cont.)

- Roles at APFO
  - Technology Services Branch
    - Ensure control point and supplemental data is stored in the database so that it is stable, supported, backed-up, and retrievable by the GSB for updating and maintenance, and by the Quality Assurance Branch (QA) for the inspection process
    - Implement QA inspection process and associated applications
    - Provide full access to the designated GSB representative so that he/she can load, update, maintain, or obsolete the control point data

Purpose and Use (cont.)

○ Roles at APFO

- Quality Assurance Branch
  ○ Inspect the horizontal accuracy of NAIP imagery using the inspection application
  ○ Notify geospatial services branch when absolute control imagery inspection is complete so the annual database maintenance process can begin
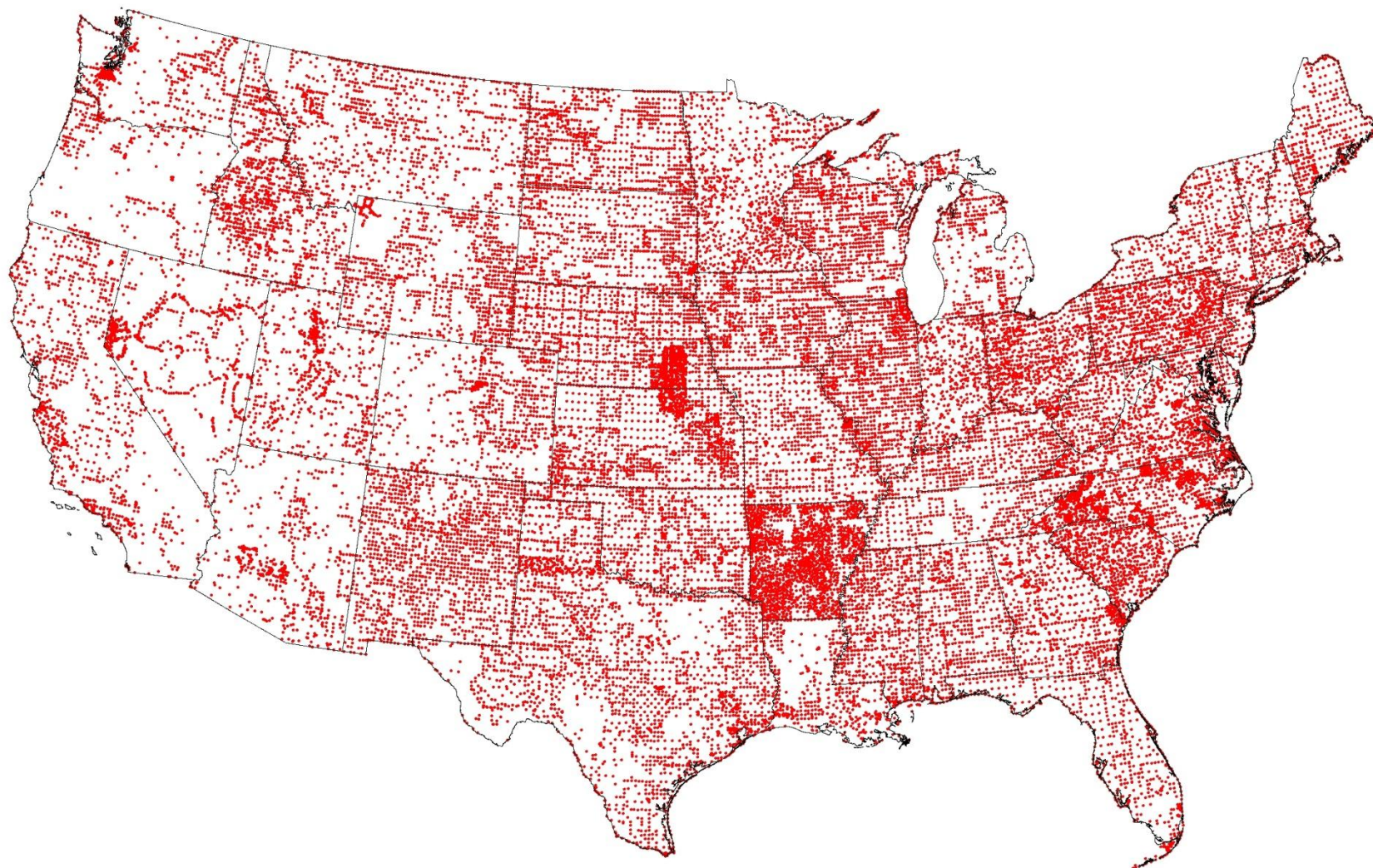
Current Status

- ~39,000 Points
  - Control Point Sources
    - Federal
      - USGS, USFS, NGS, NOAA
    - Non-federal
      - NAIP states, private industry, local governments
    - 73% of database is from a federal source
    - 99% of points provided to APFO for free
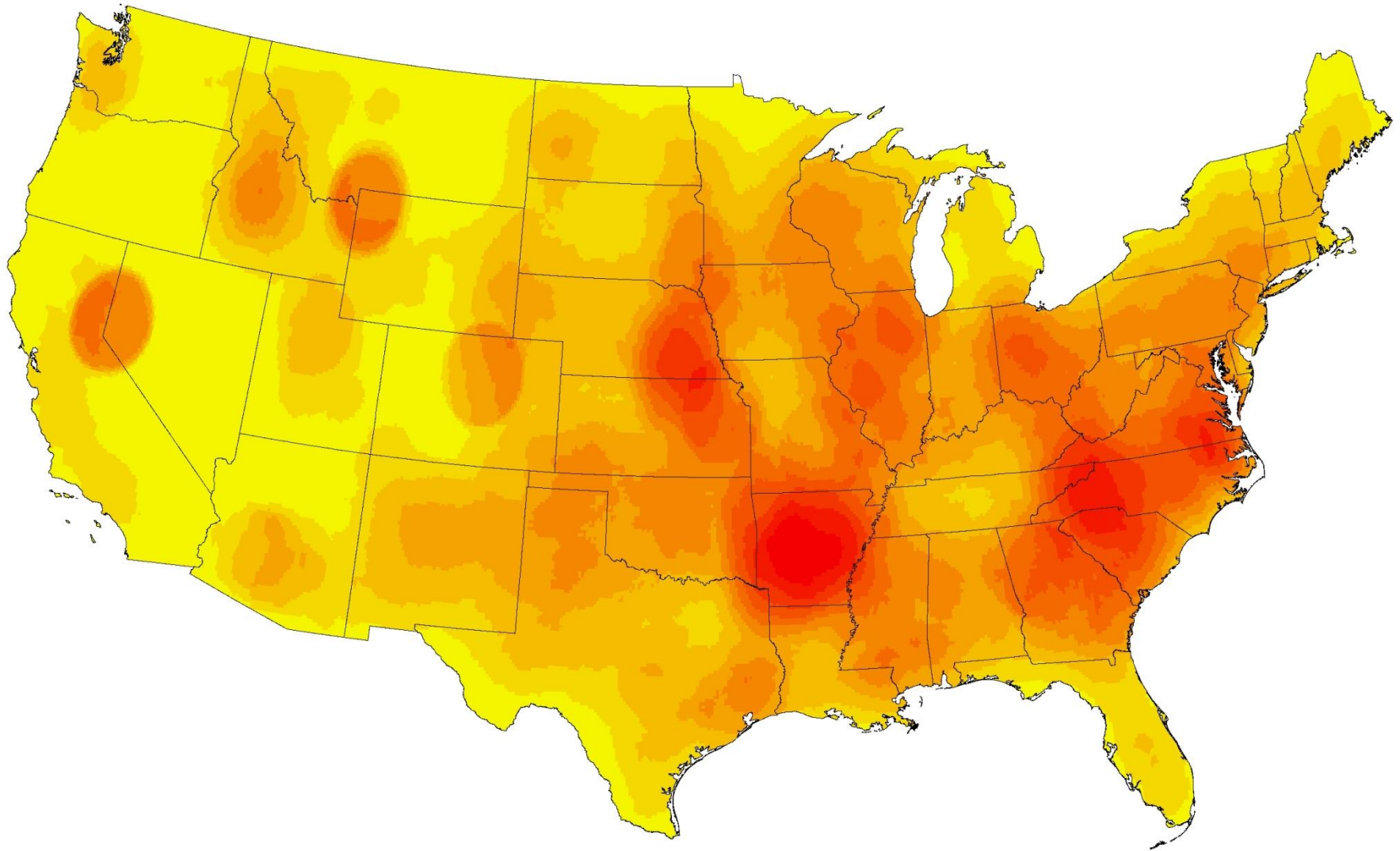- >10 Million Dollars

2008
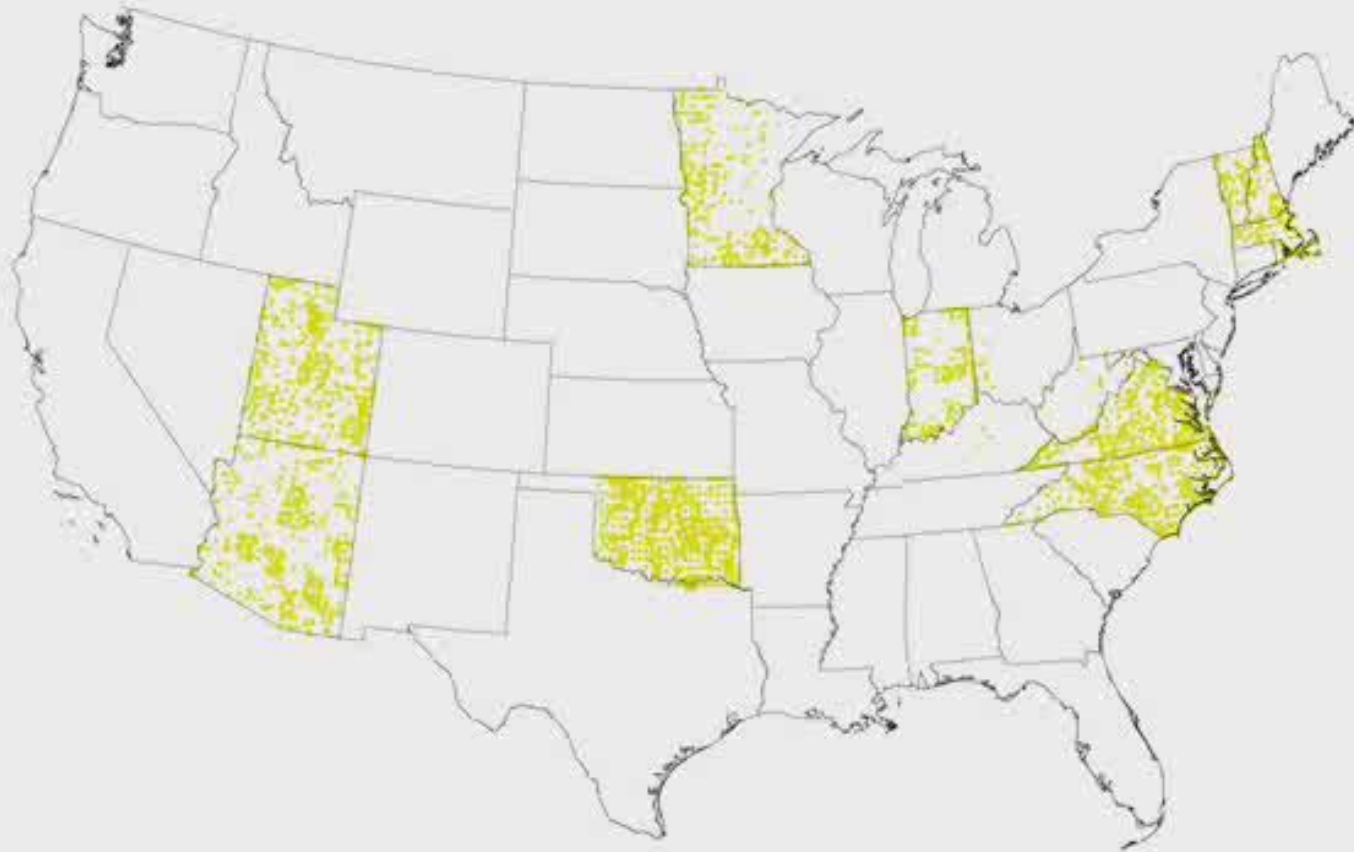
2010 Control Point Locations
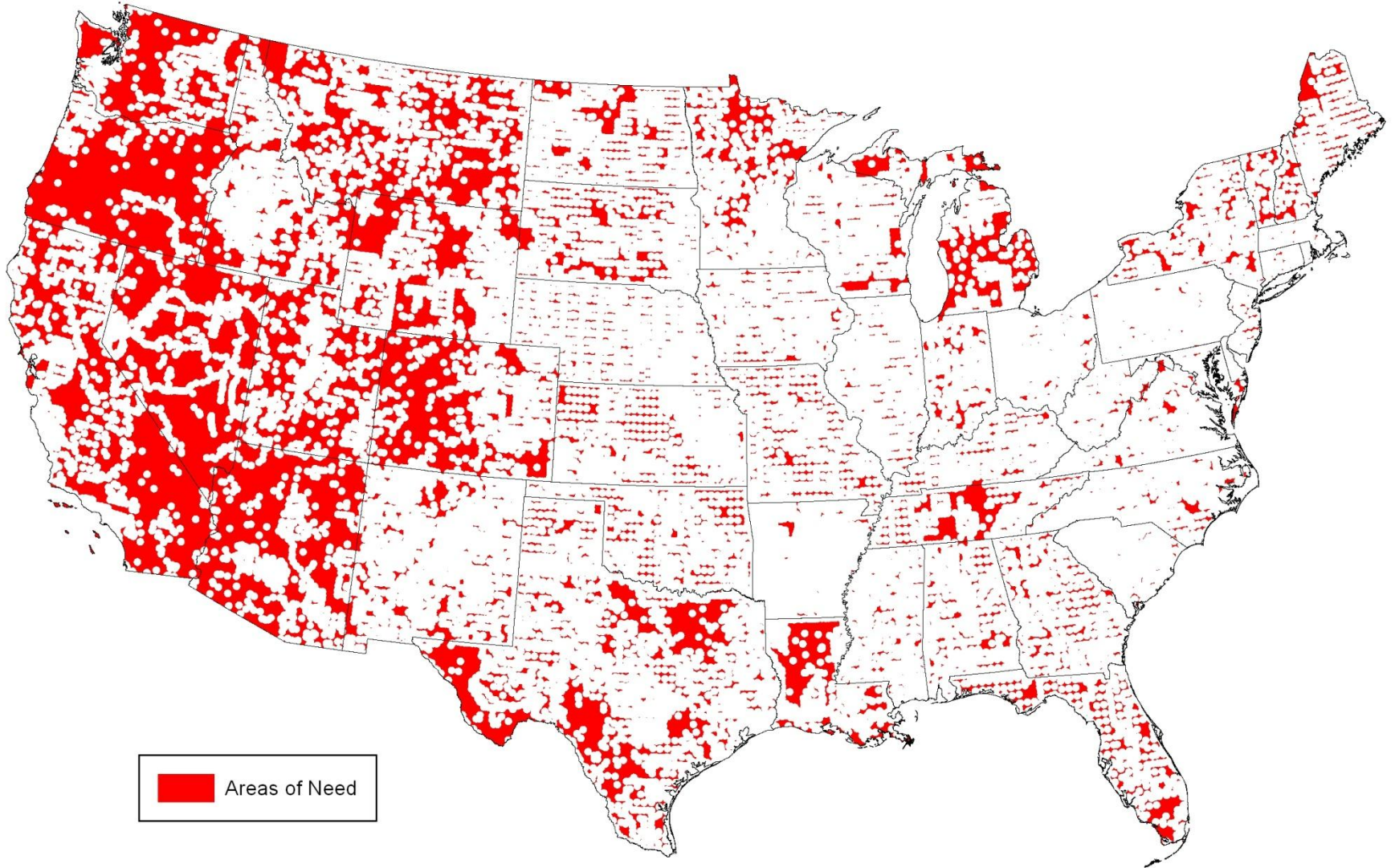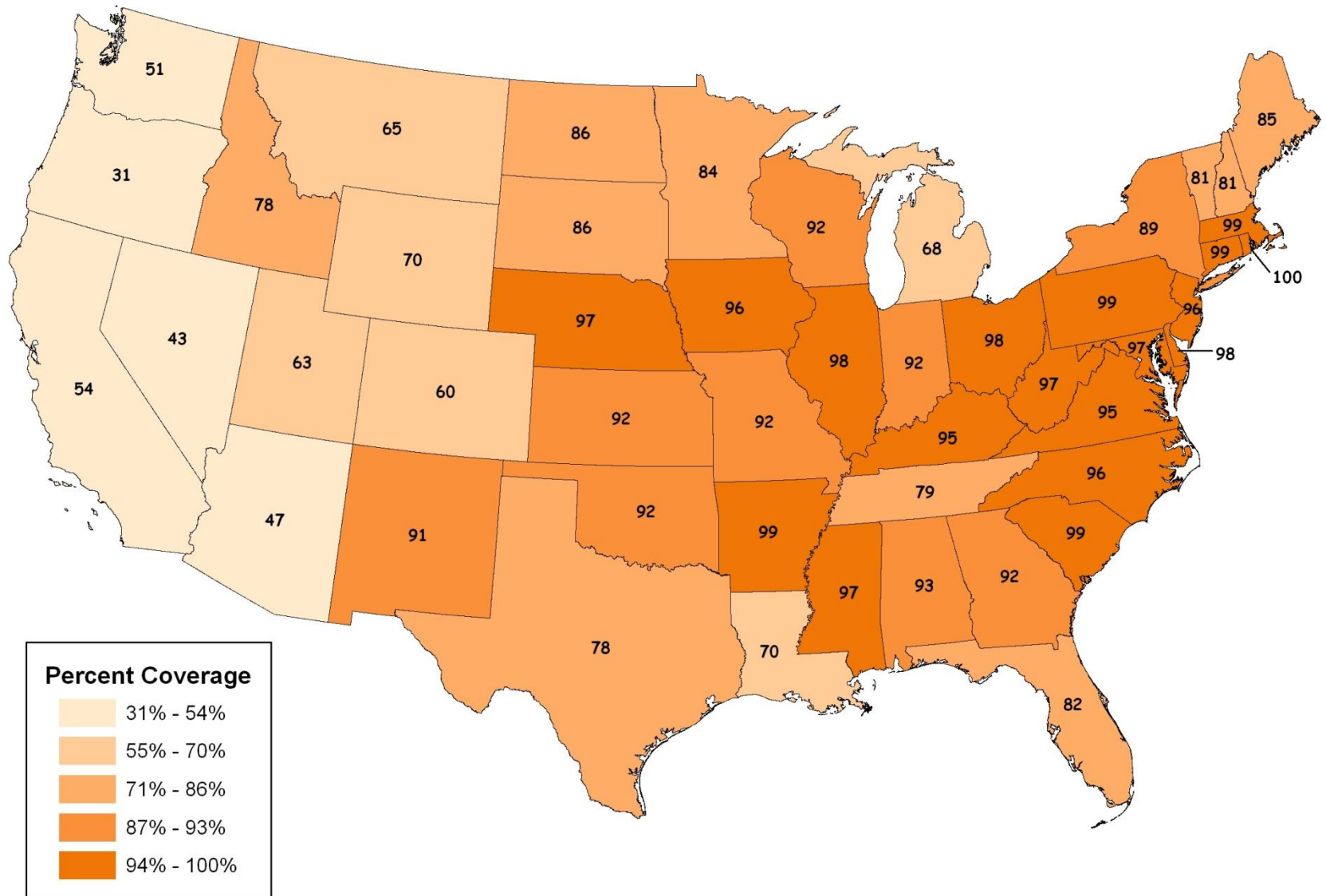
2010 Control Point Density

Less Dense   **More Dense**

Areas of Control Point Need

Areas of Need

Percent of State With Control Point Coverage

Percent Coverage

- 31% - 54%
- 55% - 70%
- 71% - 86%
- 87% - 93%
- 94% - 100%

Points per 50 Square Miles by State

Points per 50 square miles

- 0.16 - 0.43
- 0.44 - 0.72
- 0.73 - 0.95
- 0.9 - 1.24
- 1.25 - 1.83
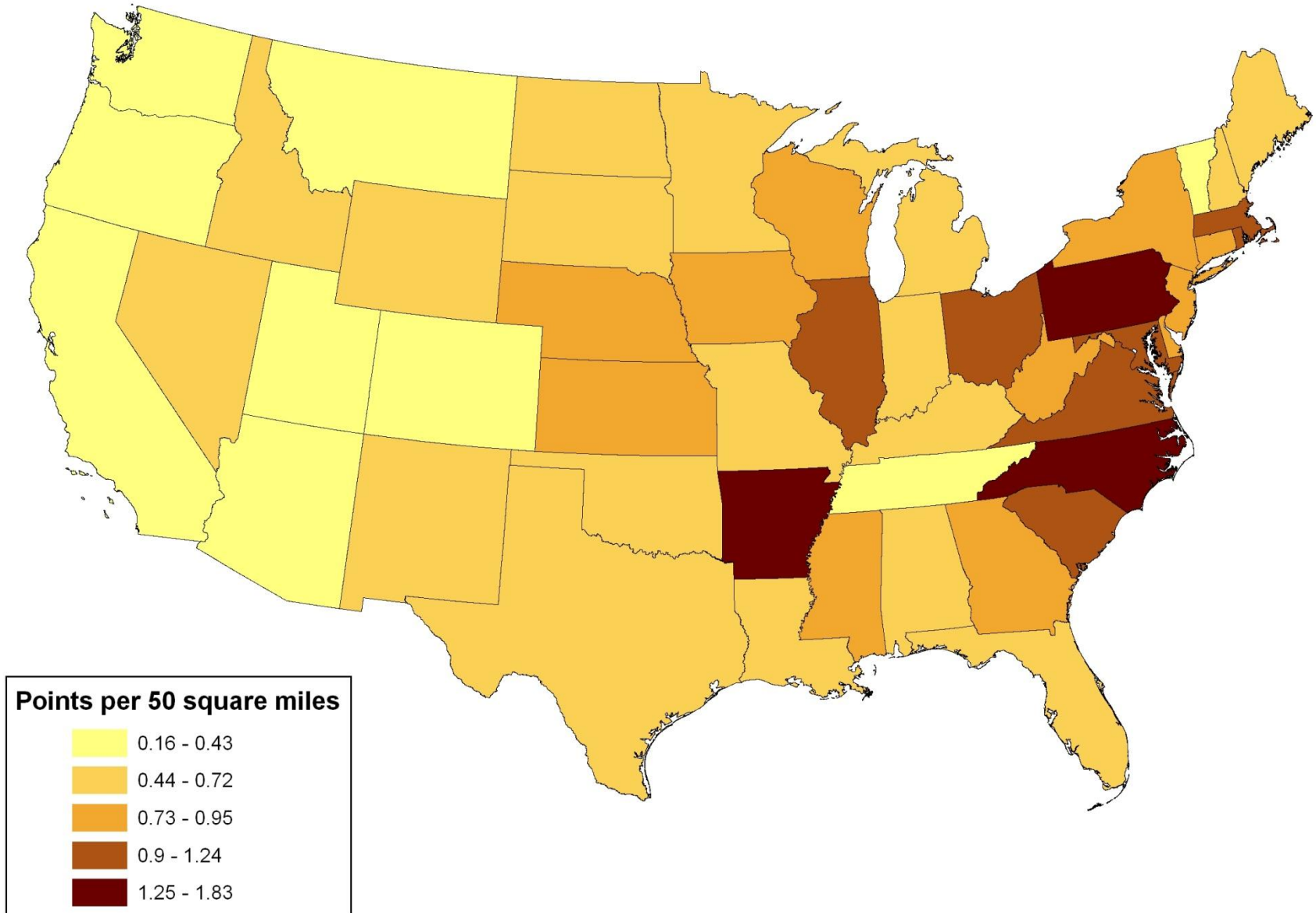
Future Plans

○ Continue to add control points to the database

- Search for data sources through research, teaming/partnering, etc.

○ Continue to use database to facilitate the horizontal inspection of NAIP imagery

○ Continue to review and inspect points and maintain the database in general

○ Focus on areas where control points are needed

Future Plans (cont.)

○ Modify NAIP control point inspection application to facilitate "ease of use"

○ Use the database to inspect imagery from other acquisition programs

Further Information

- Documentation
  - Control Point Requirements
  - Overview of how the database is used
- Contacts
  - Control point acquisition
    - David Davis: david.davis@slc.usda.gov, (801)844-2933
    - Zack Adkins: zachary.adkins@slc.usda.gov, (801)844-2925
  - Control point database
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    - Joan Biediger: joan.biediger@slc.usda.gov, (801)844-2951
  - Control point database applications
    - Margaret Nakagiri: margaret.nakagiri@slc.usda.gov, (801)844-2972
  - Control point database use in NAIP inspection
    - David Wheeler: david.wheeler@slc.usda.gov, (801)844-2963